

## Two New Species of Janolidae from Toyama Bay, Japan

(Gastropoda : Nudibranchia)

BY

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(3 Text figures)

INFORMATION CONCERNING the family Janolidae (Arminacea, Pachygnatha) has been greatly increased thanks to the latest works by BURN & MILLER, 1969 and MILLER, 1970. Thus it has become rather easier for us to identify the janolid specimens which had been collected some years ago by the members of the Biological Club, Takaoka Senior High School, from Toyama Bay and its vicinity, and placed at our disposal for study. Two new species are proposed below:

1. *Janolus toyamensis* BABA & ABE, spec. nov.

(Japanese name: Koyanagi-umiushi)

**Holotype** (Figure 1): Collected from the shore of Nakata, Toyama Bay (Japan Sea coast of Honshu Island, Japan), on August 4, 1960; 1 specimen.

When living, the animal is about 10 mm in length. Oral tentacles short, linear. Rhinophores stouter, each showing a slight indication of perfoliations on the upper half (lamellae not marked on this animal). With an inter-rhinophorial crest. Deciduous branchial papillae irregularly set in 1 - 2 longitudinal rows on back margins. They are fusiform, sparsely and indistinctly tuberculated, and exceedingly elongated to form each a tapering tip. Anus in median dorsal line, posterior; genital orifice below and behind the right rhinophore; nephroproct below the middle of the pericardial prominence on the right side. Bare space of back covered sparsely with minute tubercles. Foot broad, corners rounded. No tail crest.

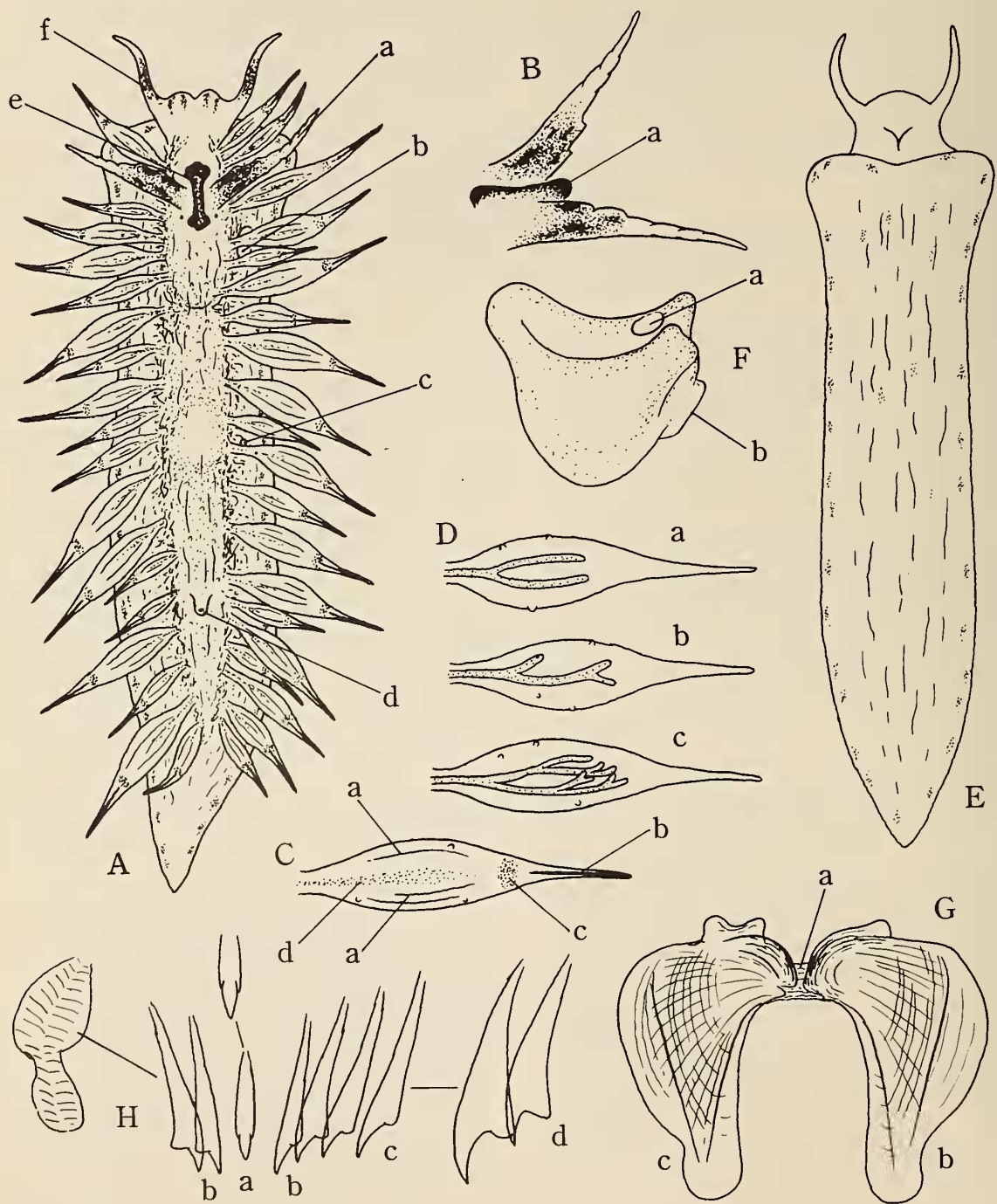
General integument of body translucent ashy yellow; on the back, sides, sole and branchial papillae it is scattered

with short longitudinal lines of opaque white. There are some additional spots of dark brown on the sides and foot brim. Each of the cephalic structures is dark brown below. Inter-rhinophorial crest black. The branchial papillae are marked each with a chrome-yellow spot a short distance below the apex which, in turn, is conspicuously tinged with reddish brown. The liver diverticulum within the papillae is dark green.

Jaws approximately equal, united by a ligament, yellowish brown in colour, each plate, though incised slightly at the hinge end in the present material, having no serial denticulations whatever. The radula is slightly yellowish and has the formula  $20 \times 10 - 20 \cdot 1 \cdot 10 - 20$ . The central is unicuspidate, the laterals are hooked, and all are quite smooth. The liver diverticula of the branchial papillae are sometimes simple, but more often they are branched. Genitalia not determined.

**Paratypes:** Collected from the shore of Cape Echizen-misaki, Fukui (Japan Sea coast of Honshu Island), on August 14, 1966; 2 specimens. These paratypes appear to be slightly larger in size than the holotype (the length of the two paratypes after preservation measured about 10 mm each). According to a coloured drawing taken from life by Mr. Haruo Izumi, there are pinnate formations on the length of the rhinophores, and the inter-rhinophorial crest assumes a vertically lobate appearance. When examining the preserved material it was noticed that there occurred more thickly set tubercles on the back and branchial papillae than in the holotype.

**Additional datum:** An additional collection of this new species was made from the shore of Okazaki, Tsuruga Bay



(Japan Sea coast of Honshu Island) on July 30, 1955. The animal was represented by a coloured drawing only, made by Abe.

**Remarks:** According to the synopsis of the genera of the family Janolidae (= Antiopellidae) by BURN & MILLER, 1969, the present new species appears to be a member of *Janolus* BERGH, 1884, by having (1) a crest between the rhinophores, (2) scattered tubercles on the branchial papillae, and (3) a non-denticulated edge on the jaw-plates, as evidence for generic assignment. This new species is especially distinct from the previously known members of the genus in the shape of the branchial papillae and in the coloration of the body.

2. *Janolus mirabilis* BABA & ABE, spec. nov.

(Japanese name: Karajishi-umiushi)

**Holotype** (Figures 2, 3): Collected from the shore of Abugashima, Toyama Bay (Japan Sea coast of Honshu Island) on August 17, 1958; 1 specimen.

Living animal about 7 mm in length. Rhinophores distinctly perfoliated above. There is a crest between the 2 rhinophores. Branchial papillae falling off easily. According to a coloured sketch made from life these papillae are covered with acutely pointed tubercles near the tip, and they stand in a single row on the antero-lateral margins of the body. A small number of papillae are found also on the postero-lateral margins of the body. The bare space of the back is covered with minute tubercles. Anus

(← on facing page)

Figure 1

*Janolus toyamensis* BABA & ABE, spec. nov.

(Holotype)

A: Animal from above; length 10 mm

a - rhinophore      b - genital orifice      c - nephroproct  
d - anus      e - inter-rhinophorial crest      f - oral tentacle

B: Paired rhinophores from right side

a - inter-rhinophorial crest

C: A branchial papilla

a - opaque white lines      b - reddish brown apex

c - chrome-yellow spot      d - dark green liver diverticulum

D: Different aspects (a - c) of the liver branching in the branchial papillae

E: Animal from below, showing opaque white lines on the sole

F: Pharyngeal bulb from right side

a - oesophagus

b - mouth

G: Paired jaw-plates from outside (× 15)

a - ligament

b - left jaw

c - right jaw

H: Transverse row of radula (× 320)

a - central tooth      b - 1<sup>st</sup> lateral      c - 4<sup>th</sup> lateral      d - 18<sup>th</sup> lateral

(figures by K. BABA)

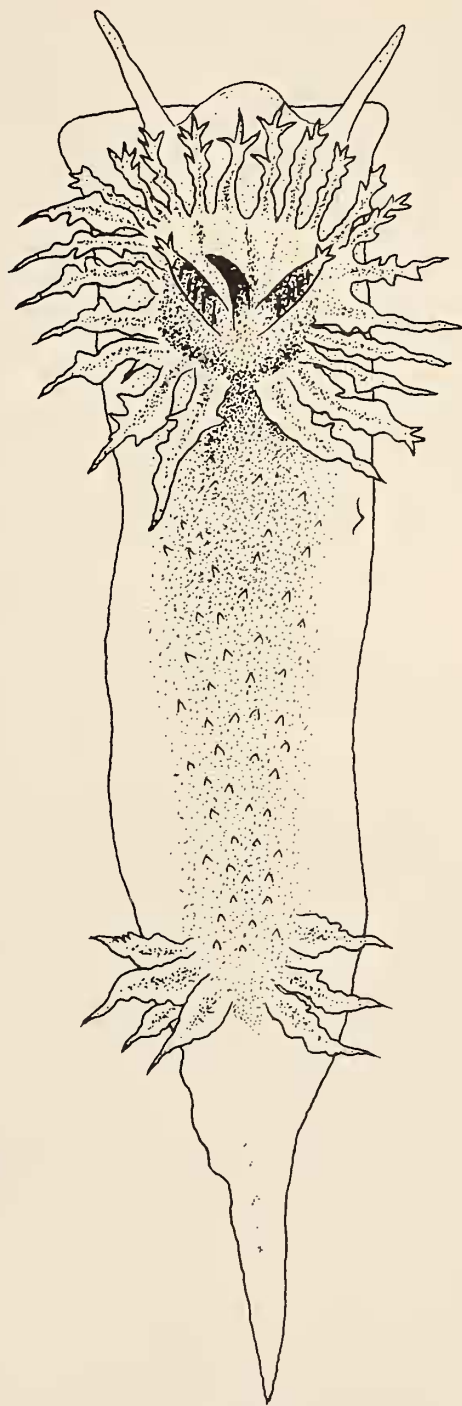


Figure 2

*Janolus mirabilis* BABA & ABE, spec. nov.

(Holotype)

Animal from above (adapted from the original drawing made by Mr. Seigoro Takahashi); length 7 mm



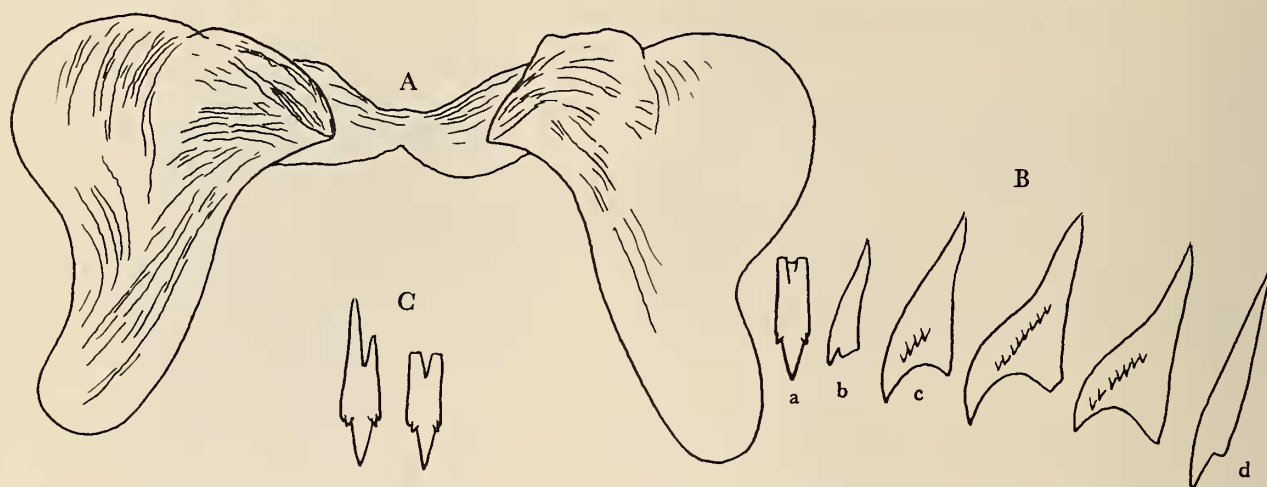


Figure 3

*Janolus mirabilis* BABA & ABE, spec. nov.  
(Holotype)

A: Paired jaw-plates from outside ( $\times 70$ )

B: Half-row of radula ( $\times 700$ )

C: Different aspects of centrals

a - central tooth

b - 1<sup>st</sup> lateral

c - 2<sup>nd</sup> lateral

d - 5<sup>th</sup> lateral

(figures by K. BABA)

near the rear end of the mantle in the median line. Genital orifice on the right side below the anterior end of the pericardial prominence. Nephroproct not determined. Foot broad with rounded corners. No tail crest.

General integument of body translucent ashy yellow, and the back is tinged with dark brown. Rhinophores dark brown below, opaque white at tip. Inter-rhinophoral crest black. Branchial papillae tipped with opaque white; the liver diverticulum within the papillae yellowish. Tip of oral tentacles whitish. Tail and sole spotted here and there with opaque white.

Jaws very large in proportion to the size of the body, yellowish brown in colour, and not provided with serial denticles. Radula greatly reduced in size. Formula about  $20 \times 5 \cdot 1 \cdot 5$ . Teeth colourless. The central with 1 denticle on each side of the median cusp. The first 3 laterals with 7-10 serrulations each, the rest smooth. Genitalia not determined.

**Remarks:** The present new species, though more or less astonishing in the family Janolidae in the external appearance of the animal, was referred to *Janolus* by the combination of the following characters of the genus: (1) the presence of an inter-rhinophoral crest, (2) the possession of tuberculated branchial papillae, and especially (3) the absence of serial denticles on the edge of the jaw-plates. In the previously recorded species of *Janolus* the radular teeth are sometimes smooth and sometimes denticulated.

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